

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor: Radosavljevic et al.

Serial No: 09/732,120

Filing Date: 12/07/00

Title: SLIDE SWITCH FOR FAN  
CONTROL

Group Art Unit: 2833

Examiner: Luebke, Renee S

RESPONSE

Attention: Board of Patent Appeals and Interferences  
Assistant Commissioner of Patents and Trademarks  
Alexandria, VA 22313-1450

Sir:

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail addressed to Commissioner of Patents and Trademarks, Alexandria, VA 22313 on October 3, 2003.

Lynn L. Pond

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**BRIEF ON APPEAL**

This Brief supports the appeal to the Board of Patent Appeals and Interferences from the final rejection dated May 5, 2003, in the application listed above. Appellants filed the Notice of Appeal on August 7, 2003, and now submit this Brief in triplicate, as required by 37 C.F.R. § 1.192(a).

**I. REAL PARTY IN INTEREST**

Pass & Seymour, Inc., as assignee of U.S. Patent Application No. 09/732,120, is the real party in interest.

**II. RELATED APPEALS AND INTERFERENCES**

There are no related appeals or interferences pertaining to the above identified application.

**III. STATUS OF CLAIMS**

**A. Claims 1 – 6 Are Finally Rejected**

Claims 1 – 6 were rejected in the final Office Action dated May 5, 2003.

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B. Claims 1 – 6 Are On Appeal

The decision of the U.S. Patent and Trademark Office (“the Patent Office”) that finally rejected claims 1 – 6 is hereby appealed.

IV. STATUS OF AMENDMENTS

No Amendments were filed after the Final Rejection.

V. SUMMARY OF INVENTION

A. Brief Description of the Invention

Appellants’ invention is directed to a is directed to a slide switch 10 disposed on a circuit board 15. The slide switch includes a housing 13 that is connected to the circuit board 15. A glider 20 is slidably disposed inside the housing 13 with a portion of the glider extending outside the housing. Contact springs 22 are connected to the glider 20. The contact springs 22 are oriented in a direction substantially parallel to a direction of travel of the glider in the housing 13. The contact springs 22 have a projection extending away from the glider 20. The circuit board 15 includes a plurality of contacts 24 mounted on one side of circuit board 15. A resistor-capacitor (RC) circuit is also mounted on circuit board 15. The contacts 24, the RC network and all other components are interconnected by electrical traces disposed in and on the circuit board 15. The contacts 24 are arranged in at least one row extending substantially in the same orientation direction as that of the contact springs 22. The plurality of contacts 24 are spaced apart such that the projection of the at least one contact spring forms a detent fit in a space between each pair of adjacent contacts 24 in the at least one row. A portion of the at least one contact spring makes electrical contact with the pair of adjacent contacts when the projection forms the detent fit to thereby form an electrical connection between the pair of adjacent contacts in the at least one row.

VI. ISSUES

Issues presented for consideration in this Appeal are:

- A. Whether claims 1 – 2 are properly rejected under 35 U.S.C. § 102 for anticipation where the applied reference does not disclose each element of the claimed invention.
- B. Whether claims 3 – 6 are properly rejected under 35 U.S.C. § 103 for obviousness where the applied references would not have been properly combinable.
- C. Whether claims 3 – 6 are properly rejected under 35 U.S.C. § 103 for obviousness where the combination of the applied references does not teach or suggest the claimed invention.

**VII. GROUPING OF CLAIMS**

In compliance with 37 C.F.R. § 1.192(c)(5), Applicant states that claims 1 – 6 stand or fall together.

**VIII. ARGUMENTS**

A. Description of the prior art cited by the Examiner.

1. Takano.

Takano is directed to a slide switch having a movable conductor which serves as a movable contact. The contact is movable relative to fixed parallel bus-bar conductors. The slide switch includes a slide body 12 which fits into housing 10. Takano is specifically directed to slide switches that include bus bars (Column 1, lines 10 – 16). A movable contact 16 is disposed inside slide body 12. The slide switch also includes a bottom plate 10d. Bottom plate 10d includes recesses 20 b' which accommodate the contact portions of bus-bar conductor strips 22. Thus, when bottom plate 10d is secured to housing 10, the contact portions of conductor strips 22 are pressed against movable contact 16. Conductor strips 22 also extend outside of housing 10 to provide electrical contact with an external circuit. The slide switch of Takano includes no internal circuitry

of its own and is designed to be employed with external circuits (Column 4, lines 46 – 50, column 5, lines 59 – 60).

2. Hanna.

Hanna is directed to a linear actuator switch configured to adjust the setting of a fan speed control. The slide switch described by Hanna is mounted on a cradle which is disposed on a support plate. The support plate, in turn, is attached to a wall mounted electrical wallbox. The capacitors used to provide selectable impedance between the power carrying leads are directly mounted to the side of the slide-switch. The resistors used to bleed charge from the capacitors are directly connected to the capacitors (See Figure 6, col. 7, line 28 – col. 8, line 9). Thus, Hanna does not show these elements being mounted on a printed circuit board. The switch described by Hanna is coupled to an external fan motor armature winding by way of power lead 37. The switch receives input power from power carrying lead 35 (Figure 6, col. 7, lines 49 – 52).

B. Claims 1 – 2 are patentable under 35 U.S.C. § 102 because the applied reference does not disclose each element of the claimed invention.

In the final Office Action of May 5, 2003, the Examiner rejected pending claims 1 and 2 under 35 U.S.C. § 102 as being unpatentable over Takano. On page 2 of the final Office Action, the Examiner asserted that claims 1 and 2 were anticipated by Takano. The Examiner asserted that Takano discloses “a circuit board 10d, a housing 10a connected to the circuit board, a glider 12, a contact spring 16 with a projection 16a and a plurality of contacts 22b on the circuit board.”

The Examiner has failed to make a prima facie case of anticipation because the Examiner has failed to point where the prior art reference expressly or inherently describes each and every element as set forth in the claims. The above quoted statement of rejection fails to mention every limitation in every element of claim 1. The Examiner is duty bound to point out where each element can be found in the cited prior art.

1. Takano does not teach or suggest a circuit board as recited in claim 1

As noted repeatedly throughout the prosecution, the Examiner misidentifies bottom plate 10d by referring to it as a circuit board (See col. 4, lines 20 – 21). Despite

the fact that Applicants have continually pointed this out to the Examiner, the Examiner has taken a hard line and makes a distinction between a “circuit board” and a “printed circuit board.” The Appellants respectfully point out that it is a distinction without a difference. The Examiner states:

“Applicant states that the Examiner ‘misidentifies bottom plate 10d by referring to it as a circuit board.’ However, member 10d was not called a ‘printed circuit board’ in the Office Action. There was no need to; the claims merely require a circuit board...the member is a board and it supports portions (i.e. contacts and leads) of a circuit. It is therefore a circuit board.”

The Examiner asserts that plate 10d is a circuit board because the “member is a board and it supports portions of a circuit.” In doing so, the examiner makes a distinction between a “circuit board” and a “printed circuit board” that no one of ordinary skill in the art would make. While it is well settled that an Applicant may be his or her own lexicographer, the law does not provide this luxury to Examiners. The notion that a structural plate should be construed as a circuit board because it provides structural support for certain components is absurd. The Appellants respectfully assert that those of ordinary skill in the art would not interpret plate 10d as a circuit board for the following reasons.

First, the plain language of the Takano reference unambiguously contradicts the Examiner’s interpretation. Takano himself refers to member 10d as a “bottom plate” (column 4, lines 20 – 21). Takano never refers to plate 10d as being a circuit board. Bottom plate 10d includes recesses to accommodate contact strips 22. However, a contact strip is not a circuit. Appellants also point out that bottom plate 10d is not a circuit board because plate 10d does not include any electrical traces in or on it, and does not perform any of the functions normally associated with a circuit board.

Second, the Examiner attempts to support her idiosyncratic definition of a circuit board by making a distinction between a “circuit board” and a “printed circuit board.” The Examiner states that while plate 10d is not a printed circuit board, it is a circuit board because it “supports a portion of a circuit.” Applicants point out that this rationale is

suspect because housing 10 also supports the same contact strips 22 that bottom plate 10d supports. They have matching recesses. According to the Examiner's logic, this would make housing 10 a circuit board as well. Appellants respectfully assert that the Examiner's interpretation is unreasonable.

Third, the Examiner attempts to give a meaning to the term "circuit board" that is repugnant to the usual and ordinary meaning of the term. Applicants note that Takano was filed in 1993. Certainly, circuit boards were well known by that time. As noted in a previous response, virtually every circuit board produced over the past twenty years until the present was a printed circuit board. Before printed circuit boards became state-of-the-art some twenty years ago, wire-wrap circuit boards were employed. As anyone of ordinary skill in the art will appreciate, the primary purpose of any circuit board, wire wrap of printed, is to mount and interconnect a collection of electronic components that comprise an electronic circuit. With a wire-wrap circuit board, components were mounted on a first side of a board and interconnected by copper wires disposed on the underside of the board. This technology was replaced by printed circuit board (PCB) technology approximately twenty years ago. Instead of interconnecting wires, PCBs typically include electrically conductive circuit traces disposed in layers within an insulating sheet of material. Plate 10d of Takano has none of the above described features and does not function as a circuit board. Takano rightly refers to plate 10d as a plate, and not a circuit board, because plate 10d is not used to electrically interconnect any circuit components (Figure 1, Figure 6).

Accordingly, the Examiner has failed to point out where Takano discloses a circuit board, as recited in claim 1.

2. Takano does not teach or suggest a slide switch for a circuit on a circuit board as recited in claim 1.

The device disclosed by Takano does not include any circuit. During assembly, contact strips 22 are inserted into recesses 20a' of housing 10. Subsequently, plate 10d is then attached to housing 10 by inserting contact strips 22 into recesses 20b' of plate 10d, to thereby enclose the contact strips 22 within the housing 10. One end 22a of contact strips 22 extends out of housing 10 for connection to external circuits ( Column 4, lines

17 – 22, lines 46 – 50, and column 5, lines 59 – 60, Figure 6). Appellants have repeatedly pointed out to the Examiner that Takano explicitly teaches a device that includes no internal circuitry.

Thus, the Examiner has failed to shown where Takano describes a slide switch for a circuit disposed on a circuit board, as recited in claim 1.

3. Takano does not disclose a plurality of contacts mounted on a circuit board

The Examiner has failed to point out where Takano describes a circuit board that includes a plurality of contacts on one side of a circuit board, as recited in claim 1. Claim 1 recites a circuit board having a plurality of contacts that are arranged in at least one row extending substantially in the orientation direction of the at least one contact spring, as recited in claim 1. Appellants note that Takano explicitly describes a bus bar arrangement that is supported by plate 10d. Plate 10d cannot be construed as a circuit board for the reasons provided above, and also because the slide switch of Takano is designed to be coupled to an external electrical circuit (Column 4, lines 46 – 50, column 5, lines 59 – 60). As pointed out repeatedly during prosecution, Takano is a simple, discrete switch, that provides no other functionality.

Accordingly, the Examiner has failed to point out where Takano discloses a circuit board having a plurality of contacts disposed on a circuit board.

4. Takano does not disclose a glider housing for disposition on a circuit board

The Examiner has also failed to shown where Takano describes a housing connected to a circuit board, as recited in claim 1. Takano discloses a housing 10a that is includes a glider 12, a contact spring 16, and fixed conductors 18. The housing 10a mates with plate 10d to enclose the components. As noted above, there is no circuit board within the enclosure and housing 10a is not connected to a circuit board.

Thus, the Examiner has failed to show where Takano discloses a housing connected to a circuit board.

Accordingly, the Applicants respectfully assert that claim 1 is patentable under 35 U.S.C. § 102(b) because the Examiner has failed to point out where Takano discloses the claimed invention. Claim 2 is patentable at least by virtue of its dependency from claim 1.

C. Claims 3 – 6 are patentable under 35 U.S.C. § 103(a) because Takano and Hanna would not have been properly combinable.

In the final Office Action of May 5, 2003, the Examiner rejected pending claims 3 – 6 under 35 U.S.C. § 103 as being unpatentable for obviousness over Takano in view of U.S. Patent No. 5,293,103 to Hanna. On page 3 of the final Office Action, the Examiner stated that:

“The slide switch of Hanna teaches a multi-pole, multi-throw switch similar to that of Takano. It includes a second row and a second contact spring to better handle the desired load. For the same reason, a second row and contact spring would have been obvious on the switch of Takano...it would have been obvious to have additional contacts and positions on the switch to accommodate additional speeds thereon...it would have been obvious to include capacitors to adjust the result of the output of the positions of the switch of Takano.”

The PTO may not properly combine prior art references in order to establish *prima facie* obviousness unless there is “some suggestion for doing so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art.” *In re Jones*, 21 USPQ2d 1941, 1943 – 44 (Fed. Cir. 1992); See also *In re Geiger*, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987). Obviousness cannot be demonstrated by combining prior art references absent some teaching, suggestion or incentive supporting the combination.

The Examiner must point to where the prior art suggests the desirability of the proposed combination. The Examiner has failed to perform this essential function. The Examiner did not, and is unable, to point to any place in Hanna where it suggests or provides a motive to modify the Takano structures to obtain the switch in the manner claimed by the Applicant. Instead, totally extraneous to the reference and contrary to the



PTO's own rules, the Examiner suggests, without citing support in either reference, that it would be obvious to use additional contacts and positions on the switch, and capacitors in Takano's switch. Appellants assert that the prior art actually suggests that the combination is undesirable for the following reasons.

Takano states that “[m]ore particularly, the present invention relates to slide switches having a movable conductor which serves as movable contact and a number of relatively narrow fixed parallel conductors (bus bars) [emphasis added] (Column 1, lines 10 – 16). In other words, Takano uses narrow conductive strips (See reference 18, Figure 1 and reference 22, Figure 6) that span the entire width of the switch. Hanna on the other hand, employs discrete conductive terminals that are used in pairs. If a proposed modification changes the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 123 USPQ 349 (CCPA 1959). One of ordinary skill in the art would not combine Hanna with Takano because to do so would change the way Takano operates because Takano is specifically directed to a slide switch that employs fixed parallel conductive bus bars. One of ordinary skill in the art would not employ two rows on bus bars because it would be impractical to do so. As noted above, Takano's switch is directed to a bus bar switch. Hanna is directed to a different type of switch. To replace the bus bars with the discrete conductive terminals of Hanna would change Takano from a simple bus bar type switch that is meant to be used with other external circuits, into a fan control switch.

There can be no suggestion or motivation to make a proposed modification if the proposed modification renders the prior art unsatisfactory for its intended purpose. *In re Gordon*, 221 USPQ 1125 (Fed. Cir. 1984). The Examiner asserts that “it would have been obvious to include capacitors to adjust the result of the output of the positions of the switch of Takano.” As pointed out above, Takano does not include any internal circuits. As pointed out above, Takano specifically states that the device is to be used with external circuits. Everyone of ordinary skill in the electrical arts understands that resistor-capacitor (RC) circuits are used to modify and filter specific analog signals to obtain a signal having desired frequency and/or other electrical characteristics. In other words, RC circuits are engineered to work with specific circuits. Because Takano may be

used with any one of a number of external circuits, one of ordinary skill in the art would not be motivated to provide a RC network in Takano's bus bar switch, since the RC circuit may have characteristics not be suitable for the external circuit connected thereto. Thus, the use of an RC circuit in Takano would render Takano unsatisfactory for its intended purpose because it could only be used with one external circuit, i.e., the external circuit that exhibits electrical characteristics that correspond to the properties of Hanna's RC circuit.

As pointed out in the last response, which the Examiner failed to answer, the U.S. Court of Appeals for the Federal Circuit has emphasized that an Examiner "cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." *In re Fine*, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). In the instant case, the Examiner, now with the claims in mind, has selected and joined isolated parts of the references to assert that Applicant's invention would have been obvious. As noted above, one of ordinary skill in the art would not replace Takano's bus bar arrangement with discrete terminals because Takano is specifically directed to bus bar type switches. Further, because Takano is directed to a simple switch having no internal circuits, one of ordinary skill in the art would not seek to incorporate the RC network of Hanna in Takano. Clearly, the Examiner is using impermissible hindsight to assert that the present invention is obvious in light of the combined references by selecting and joining isolated parts of the references to assert Applicant's invention would have been obvious.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 20 USPQ2d 1438 (Fed. Cir. 1991). As noted during the prosecution of this application, the Examiner has failed to show how Takano could reasonably accommodate the proposed modifications. As noted above, the Examiner has failed to show how Takano could function suitably if the RC network of Hanna were included in Takano. Because RC networks are designed with certain circuits in mind, it is at best, improbable that the RC network of Hanna would have the right electrical properties relative to the Takano invention. Further, the contact arrangement in Hanna would not be a suitable replacement for the bus bars used in Takano. The replacement arrangement would not

work unless Takano were re-designed into something that would not be recognized as being Takano's switch.

- D. Even assuming , strictly arguendo, that Takano and Hanna were combinable, which they were not, the combination of these references does not teach the claimed invention.

The Hanna reference does not supply the claim elements missing from Takano. As pointed out above, the Examiner has failed to point out where Takano describes a circuit board wherein the plurality of contacts are arranged in at least one row extending substantially in the orientation direction of the at least one contact spring, as recited in claim 1. As pointed out repeatedly, neither reference describes a switch disposed in a housing that is mounted on a printed circuit board. Thus, claims 3 – 6 are patentable by virtue of their dependency from claim 1.

Further, the Examiner has failed to point out where Hanna teaches the all of the limitations of claims 5 or 6. Claim 5 specifically recites all of the terminal connections of the claimed switch. For example, one claim element states that “said switch having a second position where an electrical connection is made between said first and second terminals through a first capacitance.” The Examiner has failed to point out where this limitation, and the other limitations in claim 5 can be found in the cited references. Claim 6 has similar limitations. The Examiner has also failed to point out where these limitations can be found. Instead, the Examiner merely states that Hanna includes a RC circuit. This is not enough to sustain a rejection under 35 U.S.C. §103(a).

For all the reasons stated *supra*, there would have been no reason to combine these references. However, even if such a combination were proper, which it is not, it still would not teach the present invention as recited in claims 3 – 6.

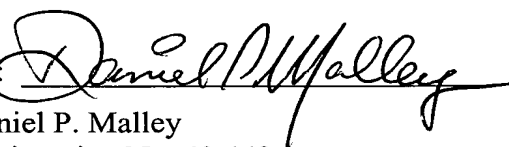
For the reasons provided above, the rejection of claims 3 – 6 as being unpatentable for obviousness under 35 U.S.C. §103(a) is improper, and should be withdrawn.

**IX. CONCLUSION**

In conclusion, Applicant requests a reversal of each of the grounds of rejection maintained by the Examiner. If there are any other fees due in connection with the filing of this Brief on Appeal, please charge the fees to our Deposit Account No. 50-0289. If a fee is required for an extension of time under 37 C.F.R. § 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

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10/3/03

**APPENDIX TO BRIEF ON APPEAL**

The claims on appeal are as follows:

1. A slide switch for a circuit on a circuit board, comprising:
  - a housing connected to said circuit board;
  - a glider slidably fitting inside said housing with a portion of said glider extending outside said housing;
  - at least one contact spring connected to said glider;
  - said at least one contact spring oriented in a direction substantially parallel to a direction of travel of said glider in said housing;
  - said at least one contact spring having a projection extending away from said glider;
  - said circuit board including a plurality of contacts on one side thereof, said plurality of contacts being arranged in at least one row extending substantially in said orientation direction of said at least one contact spring; and
  - said plurality of contacts being spaced apart such that said projection of said at least one contact spring forms a detent fit in a space between each pair of adjacent contacts in said at least one row, and a portion of each said at least one contact spring makes electrical contact with said pair of adjacent contacts when said projection forms said detent fit, thereby forming an electrical connection between said pair of adjacent contacts in said at least one row.
2. A switch according to claim 1, wherein a number of rows equals a number of contact springs.
3. A switch according to claim 2, wherein said number of rows and contact springs is two.
4. A switch according to claim 3, wherein each row has six contacts and said switch has five positions.

5. A switch according to claim 4, wherein said circuit includes:

a first terminal connectable to an AC power source;

a second terminal connectable to a fan motor;

said switch having a first position where no electrical connection is made between said first and second terminals;

said switch having a second position where an electrical connection is made between said first and second terminals through a first capacitance;

said switch having a third position where an electrical connection is made between said first and second terminals through a second capacitance;

said switch having a fourth position where an electrical connection is made between said first and second terminals through a parallel combination of both said first and second capacitances; and

said switch having a fifth position where an electrical connection is made directly between said first and second terminals.

6. A switch according to claim 1, wherein said circuit includes:

a first terminal connectable to an AC power source;

a second terminal connectable to a fan motor;

said switch having a first position where no electrical connection is made between said first and second terminals;

said switch having a second position where an electrical connection is made between said first and second terminals through a capacitor; and

said switch having a third position where an electrical connection is made directly between said first and second terminals.